DA-550F/500F-HL
Multi-Channel Digital Power Amplifiers

DA-550F

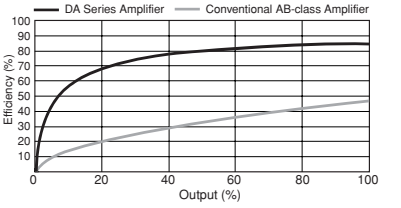
DA-500F-HL

DESCRIPTION

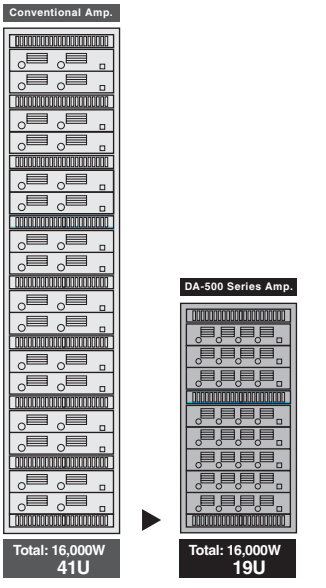
The TOA DA-550F and DA-500F-HL multi-channel power amplifiers offer a wider choice of power ratings, advanced Class D amplification circuitry, and a highly efficient AC mains to output power ratio, for the complete technological superiority it takes to support long-term installation applications. These energy-efficient, space-saving amplifiers are designed to combine high levels of performance and efficiency, and are well-suited to ensure sound reinforcement reliability in a wide range of venue types. The DA-550F is ideal for multi-zone applications such as presentation and press-conference rooms, restaurants and similar-sized locations. The DA-500F-HL is well-suited to such locations as exhibition halls, sports facilities, multipurpose halls and houses of worship.

FEATURES

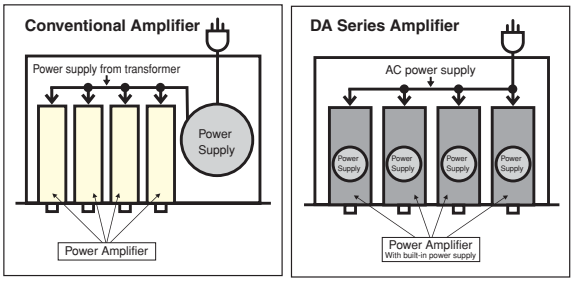
- **High efficiency**
  Extremely high amplification efficiency of 80-90%, resulting in reduction in power consumption by more than 60% compared with Class-AB amplifiers.



- **Highly durable**
  Stands up to extended hours of operation. The DA amplifier has undergone a large number of rigorous tests to prove its durability. In addition,TOA has been conducting a “non-stop driving test” of the DA Series.
- **High reliability**
  The DA amplifier has a comprehensive protection circuitry for protection against excessive current flow due to overload, short circuit, unusual DC voltage output, and power amplifier heat sink temperature rise (over 100°C), power supply temperature rise (over 80°C).
- **Amplifier with world-class lightweight design***
  Installation has become much easier thanks to the lightweight design.
  *TOA comparative data (weight/watt)
- **Compact design**
  The DA-500 Series is 2-unit size, and they can be efficiently mounted on a rack, so they require only a small installation space. Because the amplifiers do not generate much heat, 5 units can be stacked together in a rack.



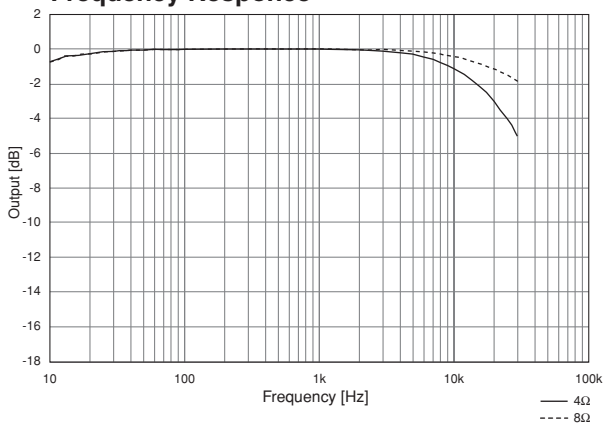
- **Independent power supply**
  Each of the channels has its own power supply. If the power supply of Channel 1 should fail, this won't affect the operation of Channels 2-4. It is also possible to use one of the channels as a spare amplifier.



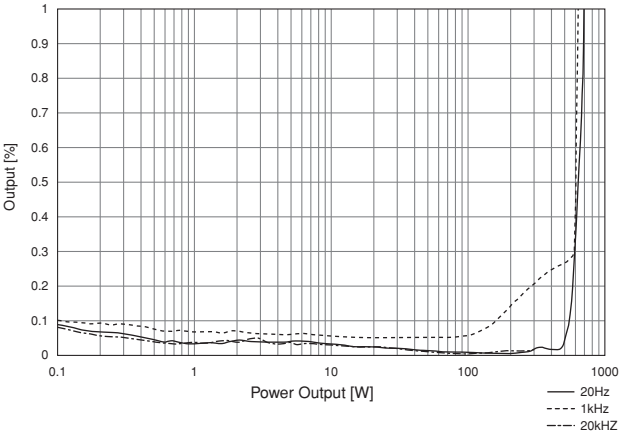
TOA

DA-550F

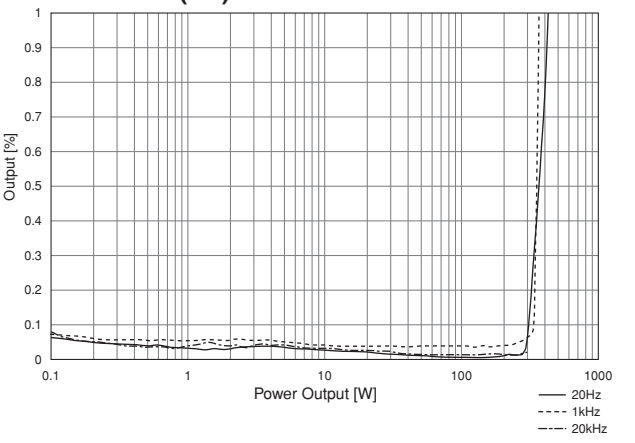
Frequency Responce



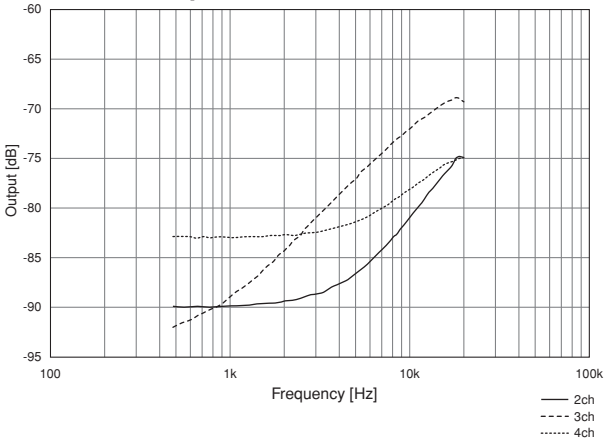
Distortion (4Ω)



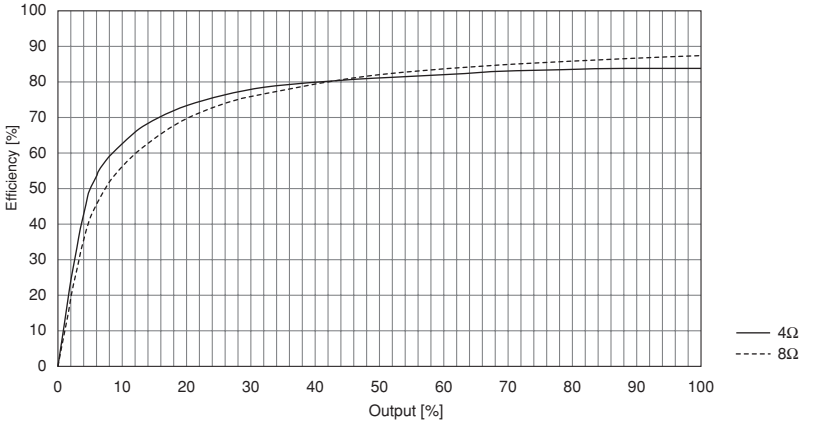
Distortion (8Ω)



Channel Separation

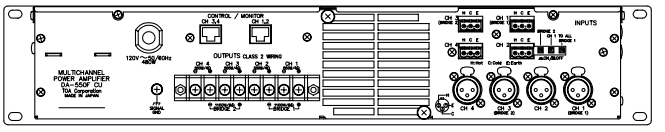


Efficency vs Output

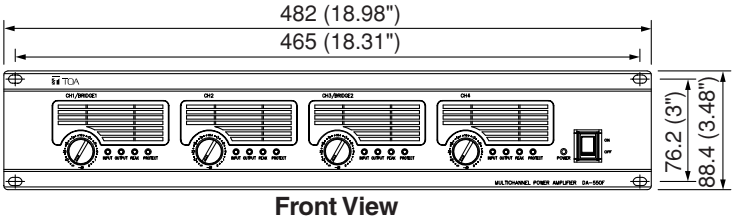


APPEARANCE AND DIMENSIONAL DIAGRAM

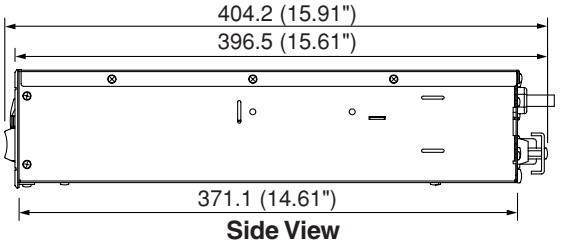
DA-550F



Rear View



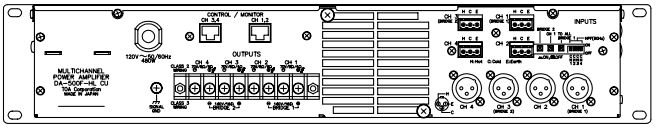
Front View



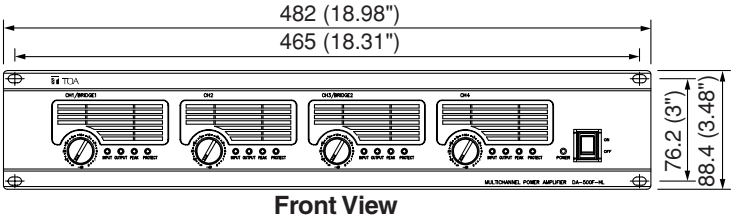
Side View

Unit: mm

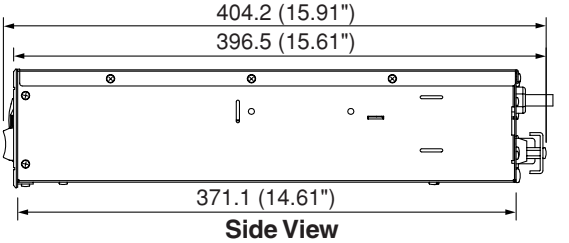
DA-500F-HL



Rear View



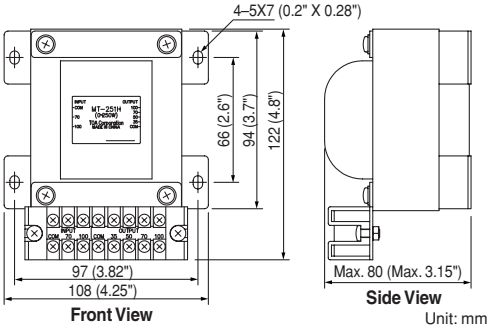
Front View



Side View

Unit: mm

MT-251H



Front View **Side View**

Unit: mm

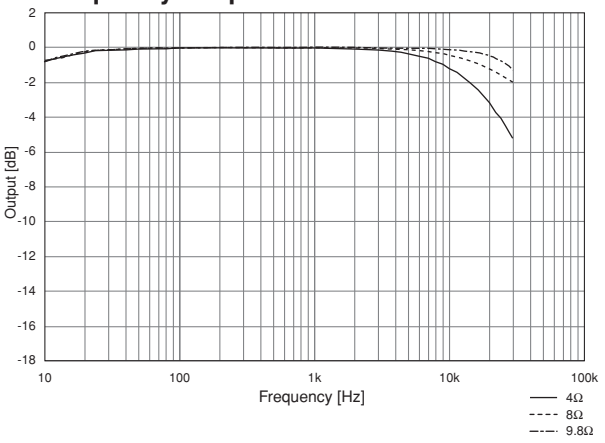
Matching Transformer

Designed for use with the DA-500F-HL Multi-Channel Power Amplifier (option), the MT-251H electrically isolates the high-impedance speaker lines from the amplifier.

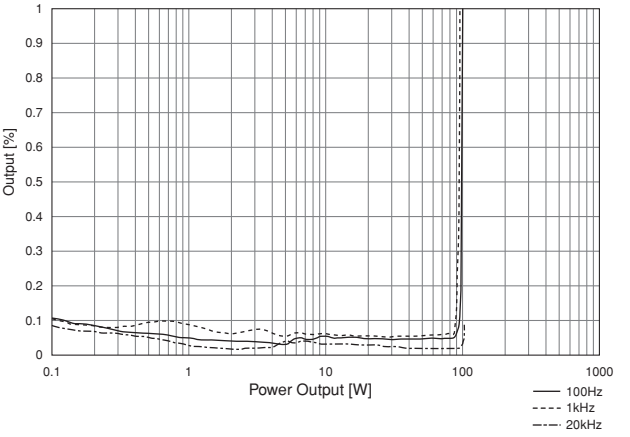
- **Capacity:** 0W – 250W
- **Primary Side:** 100V line, 70V line
- **Secondary Side:** 100V line, 70V line, 50V line, 35V line
- **Frequency Response:** 30 – 18,000Hz (+0dB, –3dB)
- **Connection Terminal:** M3 screw terminal, distance between barriers: 6.6mm (0.26")
- **Dimensions:** 108 (W) × 80 (H) × 122 (D) mm (4.25" × 3.15" × 4.8")
- **Weight:** 2.4kg (5.29 lb)

DA-500F-HL

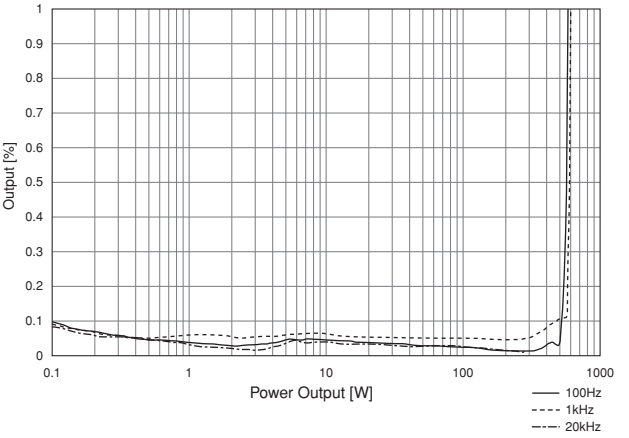
Frequency Responce



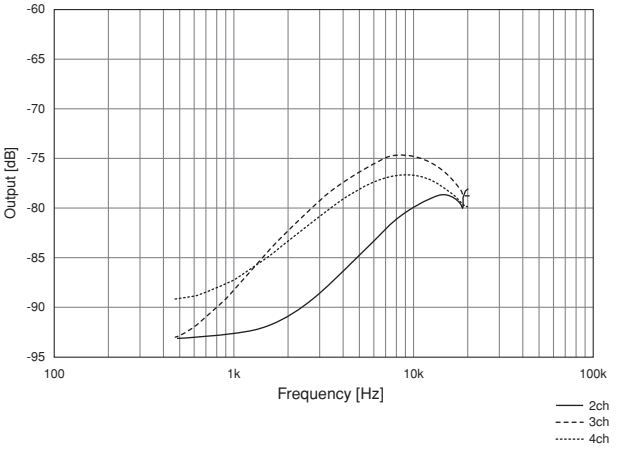
Distortion (4Ω)



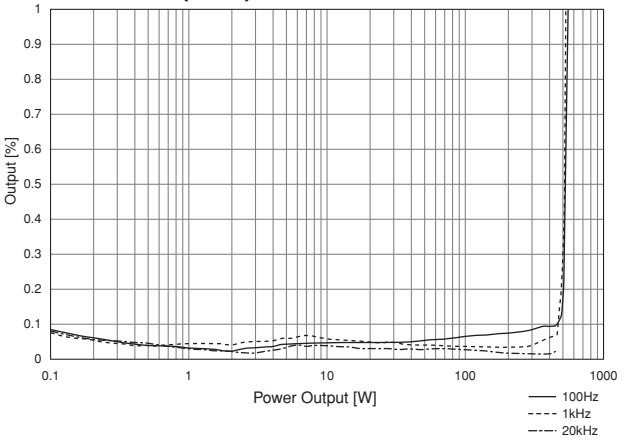
Distortion (8Ω)



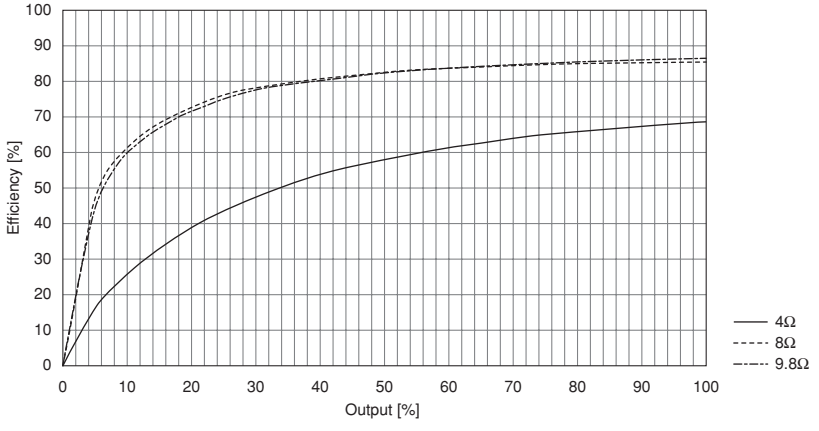
Channel Separation



Distortion (9.8Ω)



Efficency vs Output



ARCHITECTURAL AND ENGINEERING SPECIFICATIONS

DA-550F SPECIFICATIONS

The multi-channel power amplifier shall use class-D circuit topology and shall be configurable to allow two, three or four channel operation. Power output in four-channel mode with all channels driven shall be: 550 W at 4 ohms and 350 W at 8 ohms. Each pair of channels shall be independently bridgeable to produce 1100 W at 8 ohms. Total harmonic distortion (THD) shall be less than 0.1% @ 1 kHz, 0.15 % (20 to 20,000 Hz). The frequency response shall be 20 to 20,000 Hz (3 dB). The signal to noise ratio shall be 100 dB (A-weighted). The crosstalk shall be 70 dB (A-weighted). The input impedance shall be 10k ohms for each input into an electronically balanced input circuit. Rear panel switches shall allow selection of bridged operation for each pair of channel (1-2 and 3-4) independent of the status of the other pair of channels. A rear channel input mode switch shall allow the selection of input 1 to all mode, whereby the signal from input 1 is simultaneously fed to all other channels. Each input shall feature a 3 pin phoenix block and XLR connector. Rear panel output connector shall be a heavy-gauge M4 screw-terminal barrier strip suitable for use with spade lugs or up to #12 AWG bare wires. The front panel attenuators shall be recessed to prevent accidental level changes and may be removed and replaced by included security covers once levels have been properly set. The front panel shall have four sets of four LED indicators to indicate the following conditions: signal presence at input (greater than -20 dB), signal presence at output (greater than 1 W @ 8 ohms load), peak clipping and protection circuit activation. The front panel shall also have four removable air filters that may be removed for cleaning without removing the amplifier from the rack.

Built-in protection circuitry shall monitor voltage and current levels to minimize potential damage from overloads, and disable output during shorts, DC offset, or excessive operating temperature at power amp heat sink over 212°F (100°C), or excessive operating temperature at power supply heat sink over 176°F (80°C) via a relay for each channel. The relay shall also delay amplifier connection to the load during turn-on for about 2 seconds, so as to prevent any occurrence of noise at turn-on. Power consumption shall be 480 W (based on UL/CSA standards) and 2800 W (rated output 4 ohms x 4 channels), and 1650 W (rated output at 8 ohms x 4 channels). Each channel shall be equipped with control/monitor terminals to permit power on/off control of each channel, status monitoring of power on/off and protection for each channel and fan operation.

The control panel and monitor display shall be a custom made non-TOA piece. The control/monitor connection shall be made via two RJ-45 connectors.

The amplifier shall use two standard rack-spaces or 3.48" (88.4 mm) and its dimensions shall be 18.98" (W) x 3.48" (H) x 15.91" (D) (482 x 88.4 x 404.2 mm) . Front panel finish shall be black anodized aluminum and case finish shall be sheet steel. Weight shall be 19.4 lb (8.8 kg).

The amplifier shall be a TOA model DA-550F.

DA-500F-HL SPECIFICATIONS

The multi-channel power amplifier shall use class-D circuit topology and shall be configurable to allow two, three or four channel operation. Power output in four-channel mode with all channels driven shall be: 500 W at 70 V (9.8 ohms), 550 W at 8 ohms, and 100 W into 4 ohms per channel. Each pair of channels shall be independently bridgeable to produce 1000 W into 140 V (19.6 ohms), 1100 W at 16 ohms. Total harmonic distortion (THD) shall be less than 0.1% @ 1 kHz, 0.3 % (20 to 20,000 Hz) HPF OFF, and 0.3 % (100 to 20,000 Hz) HPF ON. The frequency response shall be 50 to 20,000 Hz (4 dB). The frequency response shall be 20 to 20,000 Hz (3 dB) HPF OFF. The signal to noise ratio shall be 100 dB (A-weighted).

The crosstalk shall be 70 dB (A-weighted). The input impedance shall be 10k ohms for each input into an electronically balanced input circuit.

Rear panel switches shall allow selection of bridged operation for each pair of channel (1-2 and 3-4) independent of the status of the other pair of channels. A rear channel input mode switch shall allow the selection of input 1 to all mode, whereby the signal from input 1 is simultaneously fed to all other channels. Each input shall feature a 3 pin phoenix block and XLR connector. Rear panel output connector shall be a heavy-gauge M4 screw-terminal barrier strip suitable for use with spade lugs or up to #12 AWG bare wires.

The front panel attenuators shall be recessed to prevent accidental level changes and may be removed and replaced by included security covers once levels have been properly set. A dip switch on the rear of the unit shall allow independent on/off selection of a 50 Hz (-6 dB/Oct) high-pass filter (HPF) cut-off for protection against excessive low frequency loading and saturation of speaker transformers. The front panel shall have four sets of four LED indicators to indicate the following conditions: signal presence at input (greater than -20 dB), signal presence at output (greater than 1 W @ 9.8 ohms load), peak clipping, and protection circuit activation. The front panel shall also have four removable air filters that may be removed for cleaning without removing the amplifier from the rack.

Built-in protection circuitry shall monitor voltage and current levels to minimize potential damage from overloads and disable output during shorts, DC offset or excessive operating temperature at power amp heat sink over 100°C or excessive operating temperature at power supply heat sink over 80°C via a relay for each channel. The relay shall also delay amplifier connection to the load during turn-on for about 2 seconds, so as to prevent any occurrence of noise at turn-on. Power consumption shall be 480 W (based on UL/CSA standards) and 2600 W (rated output 8 ohms x 4 channels). Each channel shall be equipped with control/monitor terminals to permit power on/off control of each channel, status monitoring of power on/off and protection for each channel and fan operation.

The control panel and monitor display shall be a custom made non-TOA piece. The control/monitor connection shall be made via two RJ-45 connectors.

The amplifier shall use two standard rack-spaces or 3.48" (88.4 mm) and its dimensions shall be 18.98"(W) x 3.48"(H) x 15.91"(D) (482 x 88.4 x 404.2 mm) . Front panel finish shall be black anodized aluminum and case finish shall be sheet steel. Weight shall be 19.4 lb (8.8 kg).

The amplifier shall be a TOA model DA-500F-HL.

SPECIFICATIONS

Model			DA-550F	DA-500F-HL
Power Source			120V AC, 50/60Hz	
Number of Channels			4	
Total Output All Channel Driven			2200W (1kHz 4Ω) 1400W (1kHz, 8Ω)	400W (1kHz, 4Ω) 2200W (1kHz, 8Ω) 2000W (1kHz, 9.8Ω:70V line)
Output Voltage per Channel			46.9V (1kHz, 4Ω) 52.9V (1kHz, 8Ω)	20V (1kHz, 4Ω) 66.3V (1kHz, 8Ω) 70V (1kHz, 9.8Ω:70V line)
Output Current per Channel			11.7A (1kHz, 4Ω) 6.6A (1kHz, 8Ω)	5A (1kHz, 4Ω) 8.3A (1kHz, 8Ω) 7.1A (1kHz, 9.8Ω:70V line)
Power Output				
8 ohms per channel			350W	550W
4 ohms per channel			550W	100W*1
16 ohms bridged			700W	1100W
8 ohms bridged			1100W	—
Hi-Z: 70V per channel			—	500W
Hi-Z: 140V bridged, per channel			—	1000W
Power Consumption*				
Idle power consumption			63W, 1.2A	69W, 1.3A
Rated power consumption				
	1kHz	8 ohms	1650W, 22.4A	2600W, 33.2A
		4 ohms	2800W, 35.5A	580W, 9.1A
		70 Volts	—	2350W, 30.4A
	1/8 Power Pink noise*2	8 ohms	317W, 5.2A	504W, 7.4A
		4 ohms	658W, 9.7A	171W, 2.9A
		70 Volts	—	437W, 6.7A
	1/3 Power Pink noise*3	8 ohms	667W, 9.5A	1080W, 15.2A
		4 ohms	1060W, 14.0A	313W, 4.9A
		70 Volts	—	1036W, 13.9A
	1/8 Power 1kHz	8 ohms	277W, 4.5A	410W, 6.3A
		4 ohms	510W, 7.6A	151W, 2.7A
		70 Volts	—	374W, 5.9A
	1/3 Power 1kHz	8 ohms	519W, 8.6A	991W, 13.5A
		4 ohms	958W, 13.0A	260W, 4.3A
		70 Volts	—	883W, 12.2A
Frequency Response			20Hz – 20kHz (–2dB, +1dB)	HPF ON: 50Hz – 20kHz (-3dB, +1dB) HPF OFF: 20Hz – 20kHz (-2dB, +1dB)
THD			0.1 % (1kHz) 0.15 % (20Hz – 20kHz)	0.1 % (1kHz) HPF ON: 0.3 % (100Hz – 20kHz) HPF OFF: 0.3 % (20Hz – 20kHz)
S/N Ratio (A weighted)			100dB	
Crosstalk at 10kHz (A weighted)			70dB	
DC Offset*			±5mV	
Voltage Gain*			32.6dB	35.1dB
Damping Factor*			95 (1 kHz, 8Ω)	115 (1 kHz, 9.8Ω: 70V line)
Inputs	Input impedance		10kΩ (unbalanced), 20kΩ (balanced)	
	Input sensitivity		+4dB (1.23V)	
	Input clipping		12V (23.8dBu)	
Rear panel	Input connectors		Detachable Euro style terminal block connector (electrically balanced), XLR-3-31 type connector	
	Speaker output		Screw terminal (M4). Accept AWG12-22	
Protection Circuit				
	Amplifier section		DC output, overheat protection, load shorting, overload current, maximum output	
	Power supply section		Overheat protection, AC rush current	
Operating Temperature			–10°C to +40°C (14°F to 104°F)	
Operating Humidity			Under 90% RH (no condensation)	
Dimensions			482 (W) × 88.4 (H) × 404.2 (D)mm (18.98" x 3.48" x 15.91")	
Weight			8.8kg (19.4 lb)	
Finish			Panel: Aluminum, alumite process, black/Case: Plated steel sheet	
Accessory			Euro style terminal block connector (3-pin) × 4, Tamper-proof cap × 4	
Option			—	Matching transformer: MT-251H

0dB=0.775Vrms
* Typical data
*1 For a 4Ω speaker, max. output is limited to 100W.
*2 1/8 power with pink noise represents typical program with occasional clipping.
*3 1/3 power with pink noise represents severe program with heavy clipping.

TOA

TOA Corporation
www.toa.jp

(1211) 833-52-395-6B u